**Minutes**
**Atlas Uranium Mill Tailings Relocation Committee Meeting**
**Grand County Council Chambers, Moab, Utah**
**Wednesday, May 1, 2002**
**9:00 AM to 1:00 PM**

In attendance:

Bill Hedden - Grand Canyon Trust (Subcommittee Chair)
Lance Christie - Grand County Planning and Zoning
Wayne Nielson - NPS
Kleston Laws - UDOT
Karen Robinson - self
Sarah Fields - self
Bill Love - self
Ivan Weber – consultant
Kim Schappert - Grand County Council
Max W. Young – Utah State Representative
Harvey W. Merrell - Grand County
Ron Hochstein - IUC
Rod Warner – Washington Group
Audrey Berry - DOE GJO
John Elmer - MacTech-GJO
Gary Kaeeiker – MacTech-GJO
Loren Morton - UDEQ/DRC
Bob O'Brien - UDEQ/DERR

## Agenda Item #1: Revisions to the rail-haul plan and cost estimate -

John Elmer, MacTech-GJO, provided an update –

DOE is revising the cost estimate for the rail-haul option. Initially DOE used the means cost estimating process with general assumptions. DOE has been fine-tuning the assumptions associated with the project. For example, they will be looking at cost impacts of using one engineering design /oversight contractor compared to using a support services contractor to manage the various design and construction contracts associated with the work. Current DOE estimate for the Klondike Flat rail haul option is down from $350 M to about $300 M.

The cost estimate for the cap-in-place alternative is also being looked at. It is not expected that the new assumption will affect this alternative as much, i.e., costs for cap-in-place do not seemed to be going down proportionately. Most recent DOE estimate is now down from about $114 M to $100 M. However, this value does NOT include groundwater remediation costs.

Details of the rail-haul alternative, and the associated costs, are also being looked at. For example, the various configurations of unit trains, use of new or existing sidings, number of rail cars per train, and subsequent effects to potential tons/day of tailings moved are being looked at to determine maximum efficiencies.

Estimates for portions of the rail-haul work include $55 million for construction of the load-out/haul/off-load. After loading, it will cost approximately 6-7 cents/ton-mile for haulage to the disposal site.

A revised comprehensive cost estimate for the rail-haul option is not currently available, and may not be available until the Plan for Remediation is final in the Fall of 2002. Members of the subcommittee expressed hope that the revised cost estimate would be made available for consideration in advance of the final report.

A question was asked regarding the assumptions used in the DOE initial estimate of cleanup costs for ground water contamination. The initial estimate of $60 million included:

1. Pump and treat to meet the objectives of the interim cleanup plan,
2. Pumping limited to only the shallow intervals of the aquifer,
3. Treatment via groundwater distillation, with the assumption that the distillation residue would be disposed of in another DOE Title I disposal cell (e.g. Cheney, Colorado).

The initial estimate did not include costs for contingencies. Current ground water modeling may change the scope, approach, time, etc.

## Agenda Item #2: Truck-haul options -

a. Mine-haul truck option - Transport costs (haul only) via mine-haul trucks (100-ton payload) are estimated to be $20 million, or approximately 4.7 cents /ton-mile.

b. Bill Hedden met with Dave Warner, Grand County, to discuss the use of the Old County road. It was roughly estimated to cost $6 - 10 million to improve the road enough to use mine-haul trucks on it. However, the problem still remains as to how you get the mine-trucks past the narrows of the canyon near the Arches NP entrance. If some other means was devised to get the waste to a load-out on the West side of the narrows, there still would be difficult to turn the 100-ton trucks around in the small space available there. It was concluded from the meeting that improving the Old County road to usable condition was probably not a viable option.

The mine-haul trucks on the railroad grade option was discussed again. This option would include straddling the rail part of the time, for example, in the narrows section,

and/or traveling to the side of the railroad. Another complication is that the existing railroad grade is too narrow at a pinch point cut out of the Cutler Formation near the top of the grade. To allow the 100-ton haul trucks to traverse this section, a significant widening of this cut in the cliff would be required. It was determined that better costing of this option needs to be done so it can be compared to other options. DOE agreed to work on a more detailed cost estimate for the next meeting.

c. Over-the-road truck option – The UDOT representative stated that H191 is designed to accommodate vehicles carrying legal loads. The estimated additional truck traffic to move the tailings would probably fall within the existing design parameters for the highway. Currently H191 carries approximately 6000 vehicles per day, 20-25 % of which are trucks. UDOT does not require an upgrade (e.g., separated-highway design) for roads until the average daily traffic reaches 10-12,000 vehicles per day. Notwithstanding the inconvenience and the additional safety concerns to users of H191, the additional trucks resulting from an over-the road truck haul option could be accommodated with current highway design and planned improvements.

UDOT also stated that coordinating additional improvements, beyond those UDOT is currently undertaking, need to be included as soon as possible as UDOT is scheduled to start work on in the near future, possibly as early as Fall 2002. Additional improvements such as turnouts, acceleration lanes, or overpasses could facilitate trucks hauling tailings for the duration of the relocation project, with the future benefit of smoother traffic flow into Arches NP. UDOT estimated that a diamond-type overpass near the entrance to Arches NP would cost approximately $11 million to construct. Temporary bridges or overpasses would be less costly but UDOT did not have an estimate of costs. A rule-of thumb used to estimate the cost of a bridge is $100/square foot. A left hand turn lane that would be needed at the Klondike side of the project would cost about $250,000.

DOE estimated the cost for the over-the-road truck haul of the tailings (using 40-ton coal trucks) to be 8-10 cents/ton mile, or, as low as 6.5 cents/ton mile with overweight trucks operating under special permit.

DOE agreed to provide a more detailed cost estimate for this option, based on both a 12-hour/day and 24-hour/day haul.

## Agenda Item #3: Conveyor systems -

A belt conveyor (~ 48") from the Atlas site to the Klondike disposal site would cost an estimated $62 million to fabricate and install. A tube conveyor running the same distance would cost an estimated $114 to fabricate and install. Operation costs (electricity, maintenance) are not included in those figures, neither are post-project decontamination and salvage costs. Compared to other means of transport, maintenance costs for conveyors tend to be high. Other complications also need to be managed with this option, in that conveyors are primarily designed to move non-cohesive soils. Wet

materials and tailings slimes would stick to the conveyor belt and create a headache for transfer of the materials and decontamination after completion of the project. From these considerations, it was concluded that this option is not feasible.

Short distance applications of conveyors appeared to be much more feasible. The option of using a conveyor system in the lower part of the canyon to transfer the tailings beyond the narrows to a truck loadout facility was discussed. The narrow footprint of a conveyor system could be useful in getting the material through this area if the road-haul option was implemented

A conveyor would likely be used for the rail-haul option to transport the tailings from the pile to a rail loadout facility adjacent to the north portal of the rail tunnel on the Cane Creek (Potash) line. The cost for such a conveyor system is already part of DOE's estimate for the rail-haul option.

## Agenda Item #4: Slurry Options -

Information on slurry pipeline technology from Powerpoint presentation by Ron Hochstein, IUC President and CEO
Two basic slurry approaches:
Brute force –

- Short, heterogeneous flow
- Low solids concentrations
- Wide particle size
- Used to move dredging and tailings material

Conventional –

- stable operating forces
- Homogeneous flow
- Particle size and concentration closely controlled

Systems currently in operation 20+ years
And up to hundreds of miles in length

Control abrasion by controlling the velocity and particle size. Control corrosion by controlling pH

Advantages –

- Facilities are buried
- Use of land lowest compared to other options
- Aesthetic advantages – quiet operation

Slurry pipeline design –

- Code: ASME B31.11

- Guidelines for pipe thickness, flange specifications, burial depths (typical 1.5 meters, deeper for river crossing and agricultural lands)
- Installed with a maximum grade (~12%) so system can be shut and restarted

Design considerations –
- Particle size
- Specific gravity
- pH
- Rheology (viscosity and yield stress)
- Corrosion rates
- Throughput rates

Economics vs. other modes -
- Tonnage (rate and total volume)
- Distance
- Terrain
- Physical characteristics of material

Risks vs. other modes –
- Acquisition of right-of-way
- Water – obtaining water and dewatering
- Throughput flexibility
- Filtration capacity
- Reclamation – remove or reuse?

Benefits vs. other modes –
- Easy operation
- Availability
- Labor disruption is minimal (e.g., strikes)
- Weather and seismic events
- Security of the system (low risk of terrorism)
- Public disruption
- Public safety
- Impact of spills is low due to automated control systems

Costs for the Washington/IUC White Mesa System

1.5-3 cents /ton mile (operation and maintenance costs only) includes -
- One operator per shift
- 1 feed/prep person
- Plus electricity costs

Benefit for White Mesa vs. Klondike site –
- Non-proliferation of sites
- Potential for recycling of tailings
- Schedule – Klondike would need to be characterized (EIS?)

Additional information regarding the White Mesa site –

- One wet cell available for occasional use (e.g. when the filter press is down) and to dewater the filter.
- Disposal would be done in 2 "dry" cells.
- Use ground water from the site for the slurry potentially hastening the cleanup ground water below the Atlas site.
- Water for system available from Recapture Reservoir, Colorado River water would not have to be used.
- IUC has an escrow fund to cover cost of post closure O&M, DOE would not have to fund future O&M costs.
- IUC is looking into processing the solution to recover radium and vanadium from the liquid waste stream.
- Wastewater at end of project would go to White Mesa for management.
- Slurry pipeline at end of project could be decontaminated and left in place for Colorado River water diversions to San Juan County.
- Slurry pipeline would not be rubber lined. Wall thickness would be gauged to accommodate the anticipated abrasion and corrosion.
- Slurry pumps would be decontaminated and sold at end of the project.
- 2 –2.5 years for location and installation of the IUC alternative.

General question regarding the IUC proposal –

- How will the debris (piping, building demo, heavy equipment) from the Atlas site (~700k tons) be handled? This issue has not been addressed, but it would appear that structural debris would still need to be trucked to White Mesa for disposal.
- What about the potential RCRA regulated waste associated with the tailings? This issue has not been addressed. The presence of hazardous constituents would be important to know for design of the slurry line. More information may be obtained from the ground water sampling scheduled for June '02, and from the boring sampling scheduled for June-July '02. This sampling will fill data gaps. Sampling plans will designate the COCs.
- How will this information be made available to the public? DOE will place the results in the information repository along with an updated file index.

Disadvantages to IUC Proposal – is the high capital construction costs. However Ron Hochstein said these costs are being refined, and that the total cost for the slurry option to White Mesa would be competitive with other off-site options.

DOE also added that a slurry option to Klondike Flat will be considered in the Final Reclamation Plan.

Concerns were also expressed regarding possibility of underflow of groundwater from the Moab Mill site to the Matheson Marsh. Accounts were provided of recent research by Dr. Kip Solomon (University of Utah), sponsored by the Nature Conservancy, that indicated a possibility exists for contaminants to cross under the river and surface in the protected wetlands. Loren Morton agreed to contact Dr. Solomon and explore his

evidence for this claim. DOE suggested that DEQ consider using the State Escrow Account funds to support additional study of this problem, should it be needed to resolve this issue

## Agenda Item #5: General discussion, other options -

General discussion as to DOE's process for remedy selection. What factors is DOE considering? Environmental and human health risk, cost, and political considerations.

Will there be a future EIS, or EA, or will DOE rely on existing documents with modifications of amendments as necessary?
DOE will likely amend or modify the existing documents. DOE stated that because NRC already did an EIS, a new EIS would not be required if the cap in place option is selected. In contrast to this opinion, DOE was reminded that the former NRC EIS did NOT examine groundwater remediation at the facility. DOE responded that it would check to see if the existing DOE Programmatic EIS for the Title I groundwater program would cover this requirement for the Moab Mill site. Doubts were expressed that a programmatic EIS would suffice in that a significant surface water quality problem exists at the Moab Mill site, combined with the lack of surface water quality standards in the NRC regulations (10 CFR 40, Appendix A).

How is DOE planning to provide public participation in the decision process?
DOE's Public Participation Plan is currently being drafted. DOE expects to have the draft document available June 1, 2002, and will post a copy of the plan at the Grand County Library. DOE will accept comments to the plan at that time. It was noted that DOE is an invitee to the Stakeholders meetings and the Ground Water and Relocation Subcommittee meetings.

Bill Hedden suggested that DOE consider starting fresh with a new EIS that comprehensively addresses all site issues from the ground water contamination through the cleanup alternatives.

What options are available to the public, should DOE decide to leave the tailings in place? Litigation in the courts against DOE or a political solution to provide funds for moving the material.

Regarding the cap-in-place alternative, there was a comment during the meeting that DOE should consider a lined repository for the onsite alternative, i.e., move the material onsite to allow the placement of a full liner below tailings. However, insufficient space is available on-site to allow both the construction of a new disposal cell with underliner and staging and stabilization of the waste for transport.

Agenda Item #6: Action items for the next meeting –

- Revised cost estimate for the rail-haul alternative (DOE), to include among other things:
    - Material handling
    - Management costs
    - Contractual costs (including overhead/profit)

- Cost estimate for the road-haul alternative, including options for additional improvements to UDOT's plan, e.g., temporary overpass at the site to facilitate haul trucks merging onto H191, and a left turn lane at Klondike Flat for trucks leaving H191 (DOE)

- Cost estimate for mine-haul truck alternative on all or part of railroad right-of-way (DOE). This would include:
    - Contact with Union Pacific to see this would be allowed, and
    - Costs for haul road construction and
    - Costs to retrofit railway for the mine trucks, and costs to return railway to existing conditions.

- Revise slurry cost estimate for Klondike and White Mesa sites (DOE)

- Investigate the ground water monitoring on the south side of the river conducted by Nature Conservancy, and the potential for additional monitoring needs south of the river (UDEQ)

Date and time of next meeting:

**Wednesday, July 17, 2002**
**Grand County Council Chambers, Moab, Utah**
**9:00 AM – 1:00 PM**